

SECTION 05 40 00
STRUCTURAL COLD FORMED METAL FRAMING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Load bearing formed steel stud interior wall and other framing not for exterior walls or roof structures.
- B. Formed steel joist, purlins, slotted channel and miscellaneous framing and bridging

1.2 REFERENCES

- A. AISI - American Iron and Steel Institute - Cold-Formed Steel Design Manual.
- B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- C. ASTM A645/A645M - Standard Specification for Pressure Vessel Plates, Five Percent Nickel Alloy Steel, Heat Treated per specification.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- E. ASTM C955 - Standard Specification for Cold Formed Steel Structural Framing Members.
- F. AWS D1.1/D1.1M - Structural Welding Code
- G. ANSI/AWS D1.3 - Light Steel Welding Code
- H. SSPC (Steel Structures Painting Council) - Steel Structures Painting Manual.
- I. FBC - Florida Building Code
- J. ASCE 7 – Minimum Design Loads of Buildings and Other Structures

1.3 SYSTEM DESCRIPTION

- A. Design wall system to provide for movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
- B. Design system to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Shop Drawings:
 - 1. Provide shop drawings prepared by cold-formed steel framing manufacturer.
 - 2. Indicate component details, framed openings, bearing, anchorage, loading, welds, type, and location of fasteners, and accessories or items required of related work.
 - 3. The same specialty engineer shall certify the erection and fabrication plan.
- C. Indicate stud, floor joist, ceiling joist, roof joist, roof rafter, roof truss, and layout.
- D. Describe method for securing studs to tracks and for bolted or welded, screwed framing connections.
- E. Provide calculations for loadings and stresses of specially fabricated framing and roof trusses under the Professional Structural Engineer's seal, licensed in Florida.
- F. Product Data: Provide data on standard framing members; describe materials and finish, product criteria and limitations.
- G. Research reports for cold-formed steel framing:
 - 1. Steel framing manufacturer to have a third party evaluation report for its products. The evaluation report will demonstrate compliance with the local building code or its model code (IBC - 2012, 2015, or 2018 edition or AISI S100).

The School District of Palm Beach County

Project Name

SDPBC Project No.

- H. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.

1.5 REGULATORY REQUIREMENTS

- A. Design cold-formed metal framing in accordance with the FBC, AISI A100 "Specifications for the Design of Cold-Formed Steel Structural Members", AISI S200 and ASTM C955, Section 8.
- B. Wind loads shall be in accordance with ASCE 7.
- C. Design interior partitions for a minimum of 5-PSF with no stress increase.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum 5-years documented experience and a member in good standing of the Steel Framing Industry Association (SFIA) or be part of a similar organization that provides a verifiable code compliance program.
- B. Installer: Company specializing in performing the work of this section with minimum 3-years documented experience.
- C. Design structural elements under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State of Florida.

1.7 MOCKUP

- A. Provide mockup of exterior framed wall including insulation, sheathing, window frame, doorframe, and interior and exterior finish specified in other sections, under provisions of Section 01 40 00.
- B. Mockup Size: 6' x 4' including corner condition
- C. Mockup may remain as part of the Work

1.8 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on shop drawings.

1.9 COORDINATION

- A. Coordinate work under provisions of Section 01 31 00.
- B. Coordinate with the placement of components within the stud framing system.

PART 2 PRODUCTS

2.1 ACCESSORIES

- A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered
- B. Plates, Gussets, Clips: Formed sheet steel, thickness determined for conditions encountered
- C. Shop and Touch-up Primer: SSPC - Paint 15, Type Type-1, red oxide
- D. Touch-Up Primer for Galvanized Surfaces: SSPC - Paint 20 Type-I Inorganic

2.2 FASTENERS

- A. Self-drilling, Self-tapping Screws, Bolts, Nuts, and Washers, use ASTM A123/A123M, hot dip galvanized to 1.25 oz/sq ft.
- B. Anchorage Devices: Power-actuated, drilled expansion bolts and screws with sleeves.
- C. Welding cold formed metal framing is not allowed.

2.3 FABRICATION

- A. Fabricate assemblies of framed sections of sizes and profiles required; with framing members fitted, reinforced, and braced to suit design requirements.
- B. Fit and assemble in largest practical sections for delivery to site, ready for installation.

2.4 FINISHES

- A. General Coating Classifications:
 - 1. CP 60: G60 (Z180), A60 (ZF180), AZ50 (AZM 150) or GF30 (ZFG90)
 - 2. CP 90: G90 (Z275), AZ50 (AZM 150) or GF45 (ZGF135)
- B. Studs: Coating: CP 90: G90 (Z275), (other coatings must be authorized).
- C. Tracks and Headers: Coating: CP 90: G90 (Z275), (other coatings must be authorized).
- D. Joists and Purlins: Coating: CP 90: G90 (Z275), (other coatings must be authorized).
- E. Bracing, Furring, Bridging: Same finish as framing members.
- F. Plates, Gussets, Clips: Same finish as framing members.
- G. Plates, Gussets, Clips: Same finish as framing members.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify site conditions under provisions of Section 01 31 00.
- B. Verify that substrate surfaces and building framing components are ready to receive work.

3.2 ERECTION OF STUDDING

- A. Install components in accordance with manufacturer's instructions.
- B. Align floor and ceiling tracks; locate to partition layout. Secure in place with fasteners.
 - 1. Coordinate installation of sealant with floor and ceiling tracks.
- C. Place studs not more than 2" from abutting walls and at each side of openings.
 - 1. Connect studs to tracks using fasteners.
- D. Construct corners using minimum three studs.
 - 1. Double stud wall openings; door and window jambs.
- E. Erect load-bearing studs in one-piece full length do not splice the studs.
- F. Erect load-bearing studs, brace, and reinforce to develop full strength, to achieve design requirements.
- G. Coordinate placement of insulation in multiple stud spaces made inaccessible after erection.
- H. Install intermediate studs above and below openings to align with wall stud spacing.
- I. Provide deflection allowance in stud track, directly below horizontal building framing at non-load bearing framing.
- J. Attach cross studs and furring channels to studs for attachment of fixtures anchored to walls.
- K. Install framing between studs for attachment of mechanical and electrical items, plus to prevent stud rotation.
- L. Touch-up damaged galvanized and primed surfaces with primer.

3.3 ERECTION OF JOISTS PURLINS

- A. Install framing components in accordance with manufacturer's instructions.
- B. Make provisions for erection stresses.
 - 1. Provide temporary alignment and bracing.
- C. Place joists and purlins not more than 2" from abutting walls.
 - 1. Connect joists to supports using fastener method.
- D. Set floor and ceiling joists parallel and level with lateral bracing and bridging.
- E. Locate joist end bearing directly over load bearing studs or provide load-distributing member to top of stud track.
- F. Provide web stiffeners at reaction points.
- G. Touch-up damaged galvanized and primed surfaces with primer.

END OF SECTION